longer-acting opiate. Short-acting opiates, however, have the potential to reduce time to extubation (TTE) and may, therefore, decrease length of stay (LOS) and hospital costs. Remifentanil was added to our institution's formulary for use during off-pump bypass surgery. The objective of this analysis was to compare TTE, LOS and total hospital costs between patients who received remifentanil and fentanyl during off-pump bypass surgery. **METHODS:** The study was prospective and observational in design. Consecutive patients who underwent off-pump cardiac bypass surgery and received either remifentanil or fentanyl from September 1998 to August 1999 were included. Patient charges were converted to costs using cost-to-charge ratios. The percent of patients extubated in the operating room (OR), LOS and hospital costs were compared between the groups. **RESULTS:** Baseline demographics, including age, female patients, co-morbidities and intraoperative variables were similar between the remifentanil ($n = 39$) and fentanyl ($n = 20$) groups. Patients given remifentanil during surgery were significantly more likely to be extubated in the OR than patients given fentanyl (64% vs. 15%; $p < 0.001$). The mean LOS was similar in both groups (7.3 ± 3.1d vs. 8.3 ± 2.7d; $p = 0.27$). Patients who received remifentanil incurred lower ward ($\$3,973 \pm 1,719$ vs. $\$4,808 \pm 1,794$; $p = 0.09$), recovery room ($\$31 \pm 40$ vs. $\$65 \pm 33$; $p = 0.002$) and pulmonary function testing costs ($\$0 \pm 0$ vs. $\$34 \pm 103$; $p = 0.045$) than patients who received fentanyl. Anesthesia costs were higher among patients who received remifentanil ($\$476 \pm 102$ vs. $\$416 \pm 130$; $p = 0.06$). Medical and surgical supplies, OR, ICU, cardiac catheterization, laboratory, respiratory therapy, pharmacy, radiology and transfusion costs were similar between the 2 groups ($p > 0.05$). The total cost was $\$15,272 \pm 5,556$ and $\$15,616 \pm 4,169$ in the remifentanil and fentanyl groups, respectively ($p = 0.81$). **CONCLUSION:** Remifentanil, when used in off-pump bypass surgery, increases the likelihood of extubation in the OR. However, LOS and total hospital costs remain unchanged.

CV4

USING UK OBSERVATIONAL DATA TO IDENTIFY POSSIBILITIES FOR THE COST-EFFECTIVE IMPROVEMENT OF THE TREATMENT OF ATRIAL FIBRILLATION

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BACKGROUND: Atrial Fibrillation (AF) is the most frequent type of arrhythmia. Termination of acute AF is generally undertaken in a hospital setting. Available drugs for termination of acute AF have severe side effects and complicated dose regimens. There is a need for new drugs with a high conversion rate, favourable safety profile and easier dosing. **OBJECTIVES:** To describe the characteristics and hospital treatment patterns of patients with AF. To investigate the requirements for an improved cost-effective anti-arrhythmic therapy. **METHODS:** A database was used containing aggregated and anonymised diagnostic information, hospital experience (e.g., length of stay), and demographic data for over 80 million inpatient episodes in the UK over ten years. The database contains 28,524 hospital admissions of patients (65 and over) with a diagnosis of AF during 1999/2000. 53.3% are female, with mean length of stay (LOS) 6.1 days; 46.7% are male with LOS 4.3 days. Controlling for age, the gender LOS difference is significant ($p < 0.01$). **RESULTS:** Comorbid Conditions. 17.5% of AF patients also had a diagnosis of chronic ischaemic heart disease (IHD), a further 7.5% had myocardial ischaemia, and 19.5%, congestive heart failure. Furthermore, 24.2% of CHF patients and 16.9% of all angina patients also had clinically significant AF. Cardioversion. Cardioversion (defibrillation) is used when pharmacological therapy fails to terminate acute AF. However, significant numbers (35%) of cardioversion procedures were undertaken on an elective day case basis. We are currently investigating and will report on the resource consequences in acute AF. **CONCLUSIONS:** There is a clear unmet medical need for improved anti-arrhythmic drugs. Using the dataset, we identify two potentially cost-effective possibilities for improved anti-arrhythmic treatment: an agent which can simultaneously demonstrate effectiveness in associated cardiovascular conditions such as IHD or CHF; or an agent reducing the need for cardioversion in acute AF.

CV5

THE COST-EFFECTIVENESS OF LIFETIME FACTOR VIII PROPHYLAXIS IN THE TREATMENT OF SEVERE HEMOPHILIA A

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Prophylactic infusion of factor VIII has been shown to markedly reduce arthropathy in patients with severe hemophilia A. **OBJECTIVE:** The purpose of this model is to investigate the cost-effectiveness of prophylactic infusion of factor VIII relative to on-demand infusion therapy in patients with severe hemophilia A. **METHODS:** Two hypothetical cohorts were modeled; one cohort receiving prophylactic and the other on-demand infusions. Factor VIII infusion therapy begins at age 1 and continues unchanged over a patient's lifetime. A recursive Markov model is used to estimate the expected costs and QALYs associated with each cohort. Costs and QALYs are calculated using backward induction in 5-year intervals incorporating the DEALE method. Data inputs are estimated from published literature. The analysis is completed from a societal perspective, uses a 3% discount rate, with costs in year 2000 U.S. dollars, and has a time horizon of 50 years. **RESULTS:** According to the model, patients re-

ceiving prophylactic therapy experience both higher lifetime costs ($3,542,357) and higher QALYs (18.95) than patients receiving on-demand therapy ($2,455,268, 15.31). The ICER was determined to be $298,531/QALY. In the sensitivity analysis, the ICER was sensitive to the number of units/kg/yr of factor used per patient, the probability of arthropathy in years 1 through 5, and the utilities assigned. Varying these parameter estimates resulted in an ICER ranging from $8,315 to $616,158/QALY. **CONCLUSION:** Results from the baseline model indicate that lifetime prophylactic infusion of factor VIII in patients with hemophilia is above the generally accepted threshold for cost-effectiveness of $50,000 per QALY. Due to the model's sensitivity to the amount of factor used, it is recommended that pharmacokinetic dosing be explored to reduce the amount of factor needed to achieve therapeutic levels. Research to determine more accurate utilities for persons with hemophilia with and without arthropathy are also needed.

CV6

ECONOMIC EVALUATION OF DALTEPARIN, ENOXAPARIN AND UNFRACTIONATED HEPARIN IN THE TREATMENT OF DEEP VEIN THROMBOSIS

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OBJECTIVES: As low molecular weight heparins (LMWH)s such as enoxaparin (ENOX) and dalteparin (DALT) add drug acquisition cost, yet eliminate the need for activated prothrombin time (aPPT) monitoring compared to unfractionated heparin (UFH), we developed an economic model to quantify the value of DALT, or ENOX compared to UFH as cost per clinical event avoided from an health management organization perspective. **METHODS:** With a hypothetical patient cohort with confirmed DVT, treatment and clinical outcomes were modeled using a conventional decision tree over a 6 month timeframe. Treatment with LMWH or UFH continued for an average of 5 days. Possible clinical events included thrombocytopenia, major bleed, recurrent VTE, or death from any cause. Inpatient treatment with UFH was necessary due to the IV route of administration and need for apt monitoring. Subcutaneous administration of LMWHs facilitate early discharge from hospital or treatment in the outpatient setting for the duration. Based on published sources, we assumed the proportion of patients receiving LMWH as inpatients, outpatients or with early discharge were 45%, 30% and 25%, respectively. Drug efficacy was obtained from a meta-analysis of published clinical trials. Resource use data associated with drugs and inpatient and outpatient medical care were obtained from published sources, treatment guidelines and an expert physician panel. Medical unit costs (2000 $US) were obtained from published sources. **RESULTS:** The baseline analysis showed DALT and ENOX prevented 28 and 17 clinical events respectively per 1000 patients compared to UFH. The total medical cost per patient treated with DALT, ENOX and UFH was $3199, $3347, and $5104, (US$) respectively. Compared to UFH, cost savings with use of LMWH was attributed to reduced clinical events and fewer hospital days. Sensitivity analysis showed results were robust. **CONCLUSIONS:** These figures indicate that LMWHs provide important improvements with medical cost savings and thus are attractive both clinically and economically.

CV7

COST-EFFECTIVENESS OF CARDIOVASCULAR DISEASE (CVD) PREVENTION BY REDUCING POSTPRANDIAL HYPERGLYCEMIA

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OBJECTIVES: To estimate the cost-effectiveness of the insulinotropic agent nateglinide vs. metformin using an epidemiologic risk model that quantifies the relationship between glucose spikes as measured by 2 hour postprandial blood glucose (2h-BG) and risks for all cause mortality, acute myocardial infarction (AMI), and stroke in diabetic patients. **METHODS:** We used data from the DECODE study database (N = 22,474, with up 25 years of follow-up) to estimate parametric failure time models predicting the risk for death, AMI, and stroke for 2h-BG, and other CVD risk factors. The risk equations were used to develop a decision model that projected risks, costs, and years of life for up to 40 years for men and women with and without an intervention specifically to control 2h-BG (results for men with 2h-BG >11 mmol/L reported below). Costs included the intervention and the costs of CVD events. All costs are expressed in Swiss francs (CHF), and were discounted at 3%. Clinical efficacy was taken from a randomised clinical trial of nateglinide versus metformin. **RESULTS:** When results were projected for 15, 25, and 40 years, incremental costs were 9,137, 10,047, 10,133 CHF, respectively (1 CHF $\sim$ $0.60). Discounted years of life saved for these same intervals were 0.15, 0.24, and 0.26. The ratios of cost per year of life saved were 59,600, 41,500, 38,400 CHF. **CONCLUSIONS:** Initial modeling suggests that therapy with nateglinide among individuals with elevated levels of 2h-BG reduces the risk for death and CVD events and has acceptable cost-effectiveness ratios compared to metformin.

CV8

WORK-RELATED OUTCOMES OF PATIENTS SIX MONTHS AFTER MYOCARDIAL INFARCTION

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